

## REMARKS

Favorable reconsideration of this application is respectfully requested in view of the following remarks.

Appreciation is expressed to Examiner Hoekstra for his time and attention during the interview conducted at the U.S. Patent and Trademark Office on October 7, 2009. The remarks below discuss the substance of the interview.

This Amendment is being filed concurrently with a Request for Continued Examination.

During the interview, the discussion focused primarily on independent Claim 1. The undersigned explained that the guide wire recited in independent Claim 1 includes, in addition to other features, a first wire adapted to be plastically deformed to a desired shape and maintained in the desired shape upon being bent, and a second wire disposed proximally of the first wire and made from a pseudo-elastic alloy. In addition, the facing end faces of the first and second wires abut one another and are welded to one another to form a welded portion.

The undersigned explained during the interview that since the current rejection is based on the interpretation that Palermo et al.'s ribbon 126 constitutes the first wire, if the disclosure in Reynolds et al. would be considered relevant to the guide wire described in Palermo et al., it is the connection of the ribbon 258 and the wire portion 216 in Fig. 9 of Reynolds et al. that would be viewed as corresponding to the connection of the ribbon 216 and the core wire in Figs. 5A and 5B of Palermo et al. That is, the connection of the two wire portions 214, 216 in Reynolds et al. would not be considered the relevant portion of the Reynolds et al. guide wire vis-à-vis the connection of the ribbon 126 and the core wire in Palermo et al.

The Examiner responded to this point with the comment that the language in Claim 1 could be broadly interpreted to encompass both the connection between the ribbon 258 and the wire portion 216 in Reynolds et al. as well as the connection between the two wire portions 214, 216 in Reynolds et al.

Taking into account this observation, Claim 1 is amended here to recite that the outer diameters of the first and second wires are each gradually reduced in a direction towards the distal end in a region extending from a position on the proximal side of the welded portion to a position on the distal side of the welded portion across the welded portion.

In the guide wire disclosed in Palermo et al., it is apparent that the outer diameters of the ribbon 126 and the wire core are not gradually reduced in a direction toward the distal end of the ribbon 126 in a region extending from a position on the proximal side from the weld between the ribbon 126 and the wire core to a position on the distal side from that welded portion across the welded portion.

As further discussed during the interview, Palermo et al. clearly discloses the use of a ribbon 126 having a flat or rectangular cross-section. Though not specifically discussed in Palermo et al., it would appear that the reason for this construction is to allow a controlled bending or curving of the distal end of the guide wire. That is, the flat or rectangular cross-section of the ribbon 126 allows the distal end of the guide wire to be bent or curved in the vertical (up/down) direction in Fig. 5B, while inhibiting or preventing bending or curving of the guide wire in a direction perpendicular to such direction (i.e., in the vertical or up/down direction in Fig. 5A). Simply stated, ribbon 126 disclosed in Palermo et al. seems to provide controlled directional flexibility.

Considering at least this point, it would not have been obvious to modify the Palermo et al. guide wire so that the outer diameters of the ribbon 126 and the core wire each gradually reduce in a direction towards the distal end in a region extending from a position on the proximal side of a weld to a position on the distal side of a weld across the weld as claimed. Changing the shape of the ribbon 126 in order to achieve the gradual reduction in outer diameter of the first and second wires in the manner claimed would not have been obvious because such an arrangement would be inconsistent with providing controlled directional flexibility.

Also, it would not have been obvious to modify the Palermo et al. guide wire so that the distal end face of the core wire and the proximal end face of the flat ribbon 126 are welded to each other and are coaxial. Welding the distal end face of the core wire and the proximal end face of the rectangular-shaped ribbon 126 would not provide a sufficiently strong connection between the ribbon and the apparently round core wire.

It is thus respectfully submitted that the findings of fact do not support the conclusion of obviousness with respect to Claim 1.

Various dependent claims define further distinguishing aspects of the guide wire recited in Claim 1. For example, dependent Claim 36 recites that the first wire possesses a distal end fixed to fixing material possessing a rounded end, with the rounded end of the fixing material providing the guide wire with a rounded distal-most end. Support for this claimed aspect of the guide wire exists at least by virtue of the illustration in Fig. 6 showing the fixing material 12 with the rounded distal end forming the rounded distal-most end of the guide wire. As discussed during the interview, with this additional claimed aspect of the guide wire, the wires 216, 214 in

Reynolds et al. cannot be interpreted as constituting first and second wires as claimed because the distal end of the wire 216 in Reynolds et al. is not fixed to the rounded end 269 of the guide wire. Rather, it is the distal end of the ribbon 258 which is fixed to the rounded end 269.

New dependent Claim 37 depends from Claim 36 and further recites that the outer diameter of the first wire from the proximal end of the first wire to the distal end of the first wire is not greater than the outer diameter of the welded portion. Support for this claimed aspect of the guide wire exists at least by virtue of Fig. 6. As shown, the outer diameter of the wire 2 from the proximal end of the wire 2 to the distal end of the wire 2 is not greater than the outer diameter of the welded portion 14.

In contrast, looking at Figs. 9 and 10 in Reynolds et al., the connection between the wires 216, 214 cannot be interpreted to correspond to the claimed welded portion between the first and second wires because the outer diameter of the wire 216 in Reynolds et al. is greater than the outer diameter of the joint 212. Indeed, as illustrated in Fig. 9 of Reynolds et al., the facing ends of the wire portions 214, 216 in Reynolds are necked-down or reduced in outer diameter to receive the connector 218 at the joint 212. The portion of the wire 216 on the proximal side of the joint 212 increases in diameter. Thus, the wires 216, 214 in Reynolds et al. cannot be interpreted as constituting first and second wires, and thus cannot be said to constitute a finding of fact that would be relevant to the construction of the guide wire disclosed in Palermo et al.

New dependent Claim 38 recites that the distal end portion of the first wire is fixed to a rounded fixing material forming the rounded distal-most end of the guide wire, with the outer diameter of the first wire gradually reducing from the proximal

end of the first wire to the fixing material. This gradually reduced outer diameter of the first wire is illustrated in Fig. 15 of the present application. This drawing figure illustrates that the outer diameter of the wire 2 is gradually reduced from the proximal end of the first wire 2 to the fixing material 12. Once again, this is not the case with the guide wires disclosed in Reynolds et al. and Palermo et al.

New independent Claim 42 defines the guide wire in terms of a distally disposed first wire made from a reshapable and non-superelastic metal material, a spiral coil covering the distal end portion of the first wire, a proximally disposed second wire made from a pseudo-elastic alloy, with the proximal tip of the first wire and the distal tip of the second wire being coaxial. The first wire includes a proximal end face and the second wire includes a distal end face, wherein the proximal end face of the first wire and the distal end face of the second wire abut one another and are welded to one another to form a welded portion. The welded portion between the first wire and the second wire is located on the proximal side of the proximal end of the coil.

The claimed guide wire set forth in Claim 42 is configured so that the welded portion between the first and second wires is located on the proximal side of the proximal end of the spiral coil. With this arrangement, the coil is not required to be fixed to the second wire made from a pseudo-elastic alloy, a connection or fixation which can be a difficult task because, for example, the pseudo-elastic alloy is relatively low in wettability against solder. The fixing or the joining of the spiral coil here is thus facilitated and so it is possible to more easily manufacture the coil and more strongly fix the coil in place as discussed beginning near the bottom of page 33 of the present application.

Figs. 5A and 5B in Palermo et al. make clear that the weld between the ribbon 126 and the distal end of the core wire is positioned on the distal side of the proximal end of the coil 112.

In addition, Reynolds provides no relevant disclosure about concerns that arise when welding a spiral coil to a core wire of a guide wire, particularly a core wire comprised of a first wire made of a reshapable and non-superelastic metal material and a second wire made of a pseudo-elastic alloy. Thus, relative to the claimed guide wire set forth in Claim 42, Reynolds et al.'s disclosure of a coil 280 positioned proximally of the joint 212 is not particularly instructive here. That is, Reynolds et al. does not address the technical problem of a wirer (second wire) made of pseudo-elastic alloy being difficult to weld to a coil since Reynolds et al. does not disclose connecting the coil to a wire (second wire) of a pseudo-elastic alloy. Thus, an ordinarily skilled artisan would not have changed the welded portion of Palermo et al. to be positioned proximal of the proximal end of the coil based on the disclosure in Reynolds et al. for purposes of facilitating fixing of the coil in a manner that avoids attempting to fix the coil to a material to which it is not otherwise easily capable of being fixed. It is thus respectfully submitted that Claim 42 is also allowable.

New dependent Claims 43 and 44 define additional distinguishing aspects of the guide wire recited in independent Claim 42. For example, Claim 43 recites that the outer diameter of the first wire from the proximal end of the first wire to the distal end of the first wire is not greater than the outer diameter of the welded portion. As explained above with respect to dependent Claim 37, the joint 112 in Reynolds et al. cannot be said to correspond to the claimed welded portion at which the first and second wires are welded together because the joint 112 is specifically recessed to

receive the connector 218. With this construction, the diameter of the wire 216 on the distal side of the connector 28 is necessarily greater than the diameter at the joint.

New dependent Claim 44 is similar to dependent Claim 38 discussed above and is patentably distinguishable over the cited references for reasons similar to those mentioned above.

Independent Claim 24 defines that the guide wire comprises, *inter alia*, the first and second wires fabricated from the noted materials and welded together at a welded portion, and a spiral coil covering at least the distal end portion of the first wire. The welded portion between the first and second wires is located on the distal side of the proximal end of the spiral coil.

The Claim 24 language reciting the location of the welded portion relative to spiral coil makes it improper to consider the wires 216, 214 in Reynolds et al. as corresponding to the claimed first and second wires. That is, the joint 212 in Reynolds et al. is not positioned on the distal side of the proximal end of the coil 280. Thus, considered with reference to the claim language, it is improper to interpret the wires 216, 214 in Reynolds et al. as corresponding to the first and second wires recited in Claim 24. To the extent the Reynolds et al. disclosure would be considered relevant to Palermo et al.'s guide wire, consistency dictates that the ribbon 258 and the wire 216 are counterparts to the claimed first and second wires because it is the connection between the ribbon 258 and the wire 216 which is distal of the proximal end of the coil 280 in Reynolds et al. However, under that interpretation, the ribbon 258 and the wire 216 are not welded to one another in the manner claimed (i.e., the coaxial arrangement of the proximal tip of the first wire and

the distal tip of the second wire, and the proximal end face of the first wire and the distal end face of the second wire abutting one another and being welded to one another to form the welded portion). It is thus respectfully submitted that the rejection of independent Claim 24 is also improper and should be withdrawn.

New dependent Claims 39-41 are similar to new dependent Claims 36-38 discussed above and further patentably distinguish the claimed guide wire for reasons similar to those discussed above.

The guide wire recited in independent Claim 28 comprises the first and second wires made of the noted materials and welded to one another in the manner claimed. In addition, Claim 28 recites the third wire made of a material having an elastic modulus larger than the elastic modulus of the material forming the second wire, wherein the second and third wires are joined to each other. Once again, this language distinguishes over the way in which the disclosure in Reynolds et al. has been relied upon. That is, as a matter of consistency, the ribbon 258 in Reynolds et al. is a first wire, the wire portion 216 is a second wire and the wire portion 214 is a third wire. If the wire portion 216 is deemed a first wire and the wire portion 214 is deemed a second wire, there exists no third wire as claimed and so the connection between the wire portions 216, 214 cannot be viewed as a wire connection similar to the connection of the ribbon 126 and the core wire in Reynolds et al. Applying this interpretation to the disclosure in Palermo et al. would result in the position of the ribbon 126 in Palermo et al. relative to the core wire being maintained. If anything, the disclosure in Reynolds et al. reinforces the Palermo et al. construction in which the proximal tip of the ribbon 126 (first wire) and the distal tip of the core wire (second wire) are not coaxial, and the proximal end face of the ribbon 126 and the



distal end face of the core wire abut one another and are welded to one another to form the welded portion. It is respectfully submitted that independent Claim 28 is also allowable.

Early and favorable consideration of this application is respectfully requested


Should any questions arise in connection with this application or should the Examiner believe that a telephone conference with the undersigned would be helpful in resolving any remaining issues pertaining to this application the undersigned respectfully requests that he be contacted at the number indicated below.

Respectfully submitted,

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